

PERSPECTIVE

The International Council of Ophthalmology: Vision for Ophthalmic Education in an Interdependent World

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- **PURPOSE:** To describe the emerging strategic global perspective of the International Council of Ophthalmology (ICO) efforts in ophthalmic education.
- **DESIGN:** A global perspective describing how the development of sophisticated educational tools in tandem with information technology can revolutionize ophthalmic education worldwide.
- **METHODS:** Review of ICO educational tools, resources, and programs that are available to ophthalmic educators across the globe.
- **RESULTS:** With the explosive growth of the Internet, the ability to access medical information in the most isolated of locations is now possible. Through specific ICO initiatives, including the ICO curricula, the “Teaching the Teachers” program, and the launching of the new ICO Center for Ophthalmic Educators, the ICO is providing ophthalmic educators across the globe with access to standardized but customizable educational programs and tools to better train ophthalmologists and allied eye care professionals throughout the world.
- **CONCLUSION:** Access to educational tools and strengthening of global learning will help providers meet the goals of VISION 2020 and beyond in eliminating avoidable blindness. It is the intent of the ICO that its programs for ophthalmic educators, including conferences, courses, curricula, and online resources, result in better-trained ophthalmologists and eye care professionals worldwide. (Am J Ophthalmol 2012;154:620–624. © 2012 by Elsevier Inc. All rights reserved.)

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WITH THE EXPLOSIVE GROWTH OF THE INTERNET¹ the world of ophthalmology is becoming ever more interconnected. The Internet has changed the way information and educational resources are obtained and disseminated, and the ability to access medical information in even the most isolated of locations is now possible. With Web-based learning resources increasingly available, the range of educational options is growing.

In their article “Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world,” a global independent commission described health professionals as members of locally responsive and globally connected teams.² The publication addressed the need to revise how educational services are generated to meet a changing world:

“The extraordinary pace of global change is stretching the knowledge, skills and values of all health professions. That is why we call for a new round of more agile and rapid adaptation of core competencies based on transnational, multi-professional and long-term perspectives to serve the needs of individuals and populations.”

The International Council of Ophthalmology (ICO) recognizes this global need and is committed to leading the charge to revolutionize ophthalmic education. The ICO works with ophthalmologic societies and others to enhance ophthalmic education and improve access to the highest quality eye care in order to preserve, restore, and enhance vision for the people of the world.

The ICO has a long-term commitment to ophthalmic education as a critical imperative in the worldwide fight against vision loss. These roots stretch back to the first International Congress of Ophthalmology in 1857, the longest continuous international medical meeting. The ICO is the sponsor of this biannual meeting, now called the World Ophthalmology Congress (WOC), which in 2012 showcased over 500 multidisciplinary educational sessions and over 2000 international speakers, engaging international educators in redefining the most effective ways to teach.

In 2001, the ICO published International Ophthalmology Strategic Plan to Preserve and Restore Vision: Vision for the Future, which identified the importance of ophthalmic education in fighting blindness.^{3,4} Soon thereafter, the ICO organized international fellowships to help promising young

ophthalmologists, especially those from developing countries, improve their practical skills and broaden their perspectives of ophthalmology and bring that acquired knowledge and skill set back to their country of origin. The ICO also developed 20 International Clinical Guidelines to serve a supportive and educational role for ophthalmologists worldwide. The guidelines are designed to be translatable and easy to read, and users are encouraged to adapt, change, and edit the guidelines as needed. The ICO International Clinical Guidelines have been adapted in part from Benchmarks of Care created by the American Academy of Ophthalmology based on their Preferred Practice Patterns.

A NEED FOR ENHANCED OPTHALMIC EDUCATION

IN 2010 THE ICO CONDUCTED A SURVEY ON THE NUMBER OF ophthalmologists in practice and training worldwide, and the survey results show that despite more than 200 000 ophthalmologists, there is a significant shortfall of practitioners in developing countries. Furthermore, though the number of practitioners is increasing in developed countries, the population aged 60+ is growing at twice the rate of the profession.⁵

To meet this widening gap between patient need and professional supply, it is necessary to aggressively train eye care teams now to alleviate the current and anticipated deficit of ophthalmologists worldwide, and to develop professional competencies that are responsive to the changing health care needs across the globe.⁵

In addition to a shortfall of practitioners, the specific geographic causes of blindness and reduced vision differ widely, and curricular components essential in one geographical locale may be less or more important in other regions. Similarly, economic and social resources and development vary globally, and treatments and techniques considered indispensable for one region might be unattainable or unimportant for others. Therefore, standards of teaching, learning, and practice may need to be adapted and modified according to local priorities, goals, needs, culture, governmental policies, social systems, financial constraints, varying use of allied ophthalmic personnel, and other tangible or intangible resources. We are increasingly interdependent in terms of key health resources, and enhanced regional training is required to meet the need for eye care, especially for the 90% of the world's visually impaired living in developing countries.⁶

We have seen a rapid pace of change in health care, and there is a parallel revolution in medical education where integrated teaching, problem-based learning, community-based learning, core curricula, and systemic curriculum planning have been advocated. Related to these educational changes, the role of the medical teacher is many: mentor, learning facilitator, on-the-job role model, teaching role model, lecturer, clinical/practical teacher, resource material creator, study guide producer, course organizer, curriculum planner, curriculum evaluator, and student assessor.⁷

So that ophthalmic educators could meet these challenges, in 2004, the ICO began to develop the "Teaching the Teachers" program, an ICO umbrella initiative to develop new, more effective methods of training and continuing professional development, enabling teachers and students to connect efficiently and economically. Teaching the Teachers leverages local leaders and champions, expands access to quality eye-care education products and best practices worldwide, and provides a mechanism for networking and implementation of best practices. The initiative improves ophthalmic education and care by substantially extending ICO programs for educators throughout the world, with the ultimate result being better patient care. Led since its inception by Dr Karl Golnik, the Teaching the Teachers program has been to every continent but Antarctica and has enabled mentors in ophthalmic education to network and share high-quality educational programs with like-minded educators around the globe.

There has been an explosive increase not only in total volume of information, but also in ease of access to it.² By aggressively promoting the development of sophisticated educational tools in tandem with technology, ophthalmic education can be revolutionized.

A vital component of providing valuable ophthalmic resources worldwide and changing the methodology of ophthalmic education is partnering with like-minded organizations to support the goals of VISION 2020 in eradicating avoidable blindness. The American Academy of Ophthalmology's (AAO) Ophthalmic News & Education (ONE) Network, as one example, provides vital information for ophthalmologists around the world. Ophthalmic societies, too, play a key role by bringing the needs of their regions to the forefront, and ophthalmic educators generously share their vast array of materials.

The Teaching the Teachers initiative is a living example of the multiplier effect. By bringing adaptable, modern teaching methods to educators in underserved communities, access to high-quality eye care will be created for millions.

HOW THE INTERNATIONAL COUNCIL OF OPTHALMOLOGY SUPPORTS OPTHALMIC EDUCATORS

THE ICO USES FACE-TO-FACE INTERVENTIONS FOR TEACHING and delivery of materials as well as online technology to broaden communication and to provide resources. ICO educational tools and curricula are internationally validated. Resources are malleable rather than rigid, specifically designed to be flexible and adaptable, as different regions may have different needs. Educators are able to tailor programs and tools expressly to their region for use as is appropriate for that culture. In addition, the ICO offers resources in a multitude of ways to accommodate as many educators possible. For example, attending a multiday conference in Sydney, Australia might not be an option for

some, whereas a 2-day training seminar with educational leaders in their home location is an achievable goal.

- **CENTER FOR OPHTHALMIC EDUCATORS:** In 2008 as part of the Teaching the Teachers initiative, the ICO introduced an interactive online educational presence through World Ophthalmology Residency Development (WORD). Developed by Dr Eduardo Mayorga, ICO Director for E-Learning, and Dr Gabriela Palis, WORD Editor in Chief, WORD provided residency program teaching tools and online discussion areas.

The ICO's newly launched Center for Ophthalmic Educators (educators.icoph.org) is the next generation of WORD, offering a broad array of educational tools not only for teachers of residents, but also for teachers of medical students, subspecialty fellows, practicing ophthalmologists, and allied eye care personnel.

Ophthalmologists are required to integrate the explosive growth of knowledge and technologies while grappling with expanding functions of information technology, smart devices, and Internet-based information resources.² To help them more easily navigate through this process, the Center allows resources to be sorted by intended audience, and guides ophthalmology teachers in the construction of Web-based courses; development and use of assessment tools; and applying evidence-based strategies to enhance adult learning.

Interdependence in health care is growing and the opportunities for mutual learning and shared progress have greatly expanded. The Center recognizes this opportunity and provides a venue to build upon global relationships and strengthen ties with peers through its interactive feature, "Connections," a dynamic focal point to collaborate and share ideas. This venue allows for continuing interaction among participants of ICO face-to-face courses and also offers new communication potential for those not able to attend in-person training. We recognize that resources are not equal across the globe, and it is our hope that our educational efforts at the ICO will make as many educational resources available at a single site, on line, and at no or at substantially reduced cost.

- **ASSESSMENT TOOLS:** The ICO's Ophthalmology Surgical Competency Assessment Rubrics (ICO-OSCAR) are standardized, internationally validated tools to both teach and assess an ophthalmologist's competence in performing specific procedures. Three ICO-OSCARs are currently available in the Center for Ophthalmic Educators in both English and Spanish: Phacoemulsification, Extracapsular Cataract Extraction, and Small Incision Cataract Surgery. Strabismus Surgery and Lateral Tarsal Strip are 2 additional ICO-OSCARs due in 2012.

- **WEB-BASED TEACHING COURSE FOR MEDICAL EDUCATORS:** Designed for ophthalmic educators of all audiences, Web-based Teaching: An Online Course for

Medical Educators offers teaching strategies on how to become a good teacher and how to incorporate effective interactive teaching activities into the classroom environment. The course provides learning activities to practice concepts and apply knowledge and is available in the Center for Ophthalmic Educators as of the end of May 2012.

- **ADAPTABLE CURRICULA OF OPHTHALMIC EDUCATION:** Education in the 21st century is being transformed. The mismatch of professional competencies to patient and population priorities because of fragmentary, outdated, and static curricula has been recognized as a slow-burning crisis.²

Under the leadership of Mark O.M. Tso, ICO Education Director, a major cornerstone of the Teaching the Teachers program was the development in 2006 of 4 curricula of ophthalmic education: Education of the Ophthalmic Specialist,⁸ Education of Medical Students,⁹ Continuing Medical Education in Ophthalmology,¹⁰ and Paraophthalmic Vision Specialist Education.¹¹ The paraophthalmic (also referred to as Allied Ophthalmic Personnel) curriculum was developed in collaboration with the International Joint Commission on Allied Health Personnel in Ophthalmology (IJCAHPO), as was the International Core Curriculum for Ophthalmic Assistants, introduced in 2009,¹² and the International Core Curriculum for Refractive Error, added in 2011.¹³ IJCAHPO prefers the term "Allied Ophthalmic Personnel" rather than "Paraophthalmic Personnel," as "Allied Ophthalmic Personnel" reinforces the team approach to eye care. The curricula are included as core educational resources at the Center for Ophthalmic Educators and are widely used around the world.

Recognizing that key curriculum and knowledge required to treat diseases may vary within different worldwide geographic locations, the curricula were intended to be considered a work in progress, revised and modified to suit local needs and to respond to expanding knowledge and technologies.⁴

In developing the 2006 curricula and going forward, the ICO deliberately shifted from an "Apprenticeship System" format, where content may be contingent on the bias of trainers, to a curriculum-based system. The latter provides an educational framework where goals, expectations, knowledge base, competencies, and technical training are carefully defined to initiate the training process.

In 2009, the European Board of Ophthalmology, led by President Marko Hawlina, of Slovenia, accepted the ICO Resident-Specialist Curriculum as the scaffold for training of the ophthalmic specialist. Importantly, in accordance with the principles of "Refocusing Ophthalmic Education," this action by the European Board of Ophthalmology directs attention to the knowledge, skills, and additional competencies to be mastered during ophthalmology resident-specialist education. The curriculum was also recognized as a "Best Practice" by the Residency Review

Committee of the (U.S.) Accreditation Council for Graduate Medical Education (ACGME) and has been translated into Spanish, Mandarin, Portuguese, and French.

• **RESIDENCY CURRICULUM UPDATE:** The Residency Curriculum underwent a significant update in 2011 under the leadership of Andrew G. Lee, curriculum chair.¹⁴ The 2011 Residency Curriculum builds upon the efforts of the 2006 ICO Task Force on Ophthalmology for Resident and Specialist Training, who collected and analyzed curricula from ophthalmology residencies and training programs worldwide.

For the 2011 update, 16 international committees, divided by subspecialty and guided by individual subspecialty chairs, updated the existing guidelines and references, reinforcing essential cognitive and technical ophthalmic skills. Two new sections were added, Refractive Surgery and Community Eye Health. Like the 2006 curriculum, which outlined a broad-based curriculum, the learners' experience and expertise is stratified at basic, standard, and advanced levels of ophthalmic training; but a new fourth level, "very advanced," corresponding to a "subspecialist" or "fellow" level of training, has been added. Within each training level, "must-know" items are identified. These levels of standardization act as a foundation for developing clear and defined milestones, and provide benchmarks to gauge progress and performance. The ICO residency curriculum offers an international consensus on what residents should be taught.

While the residency curriculum provides a standardized content outline for ophthalmic training, by being delivered online, it becomes a "living document," a customizable curriculum allowing for adaptation and translatability with the precise local detail for implementation left to each region's educators. The ICO's goal is to create a curriculum of enduring value for widely different regions regardless of nationality, culture, or socioeconomic status. Educators are invited to post online recommendations on the current curriculum at the Center for consideration in later editions.

Future ICO educational plans include defining curricula for the ophthalmologic subspecialties based on international consensus. Though the United States has subspecialty curricula, they were not developed with other geographic regions in mind or designed to be customizable. For example, what US experts may agree should be included in a fellowship curriculum for cornea may differ from standards achievable in other countries, and specific knowledge and skills required in one geographic area may not be applicable for another.

The first 4 subspecialty curricula to be developed are Glaucoma; Oculoplastics and Orbit; Neuro-ophthalmology; and Cornea, External Disease, and Refractive Surgery. These curricula will include core content and will also specify what the core learning environment should be for

acceptable subspecialty programs worldwide. The ICO residency curriculum, other existing ICO curricula, and future subspecialty curricula are critical tools for teaching available at the ICO's Center for Ophthalmic Educators.

• **COURSES FOR DIRECTORS OF RESIDENCY PROGRAMS:** Since 2004, the ICO has conducted 19 Ophthalmology Program Directors courses in 14 different countries, reaching 1000 directors. These courses focus on curriculum development, methods of instruction, skills assessments, measuring competence, and resident behavior. Attendees tend to be practitioners who do not have the resources or time to travel to larger training venues. In 2012, the ICO, in conjunction with IJCAHPO, conducted a training course for allied health care trainers in Pakistan, specifically for training teams of eye care professionals.

• **REGIONAL CONFERENCES FOR OPHTHALMIC EDUCATORS:** New in 2011, the ICO began organizing conferences for ophthalmic educators in collaboration with supranational and national societies. The conferences cover modern educational theory, methods, and tools with interactive workshops and discussion groups. They also offer the opportunity for educators to develop relationships with other educators in their region and to continue to problem solve following the conference using electronic communication through the Center for Ophthalmic Educators.

• **WORLD OPHTHALMOLOGY EDUCATION COLLOQUIUM (WOEC):** Started in 2008, this series of symposia and keynote talks, held during the World Ophthalmology Congress, engages educators in redefining the most effective ways to teach. The WOEC affords an opportunity to train large numbers of educators with a broad variety of short interventions. The WOEC in 2012 included talks on online assessment and feedback, teaching ophthalmic subspecialties in developed and developing countries, and implementing core curricula for allied health personnel.

To access these and other Teaching the Teachers programs and resources, go to the Center for Ophthalmic Educators at educators.icoph.org.

• **OTHER EDUCATIONAL PROGRAMS:** The ICO is committed to supporting ophthalmic education, advocating quality eye care, and advancing scientific ophthalmology through support of ICO programs, which include:

• **World Ophthalmology Congress (WOC).** First held in Brussels in 1857, the WOC is the longest continuing international meeting in all of medicine.¹⁵

• **ICO International Examinations for Ophthalmologists.** The ICO Examinations promote the excellence of eye care worldwide by encouraging individuals to acquire and maintain the highest standard of practice of ophthalmology and are the only worldwide medical specialty examinations. In 2011 over 2000 ophthal-

ologists took the examinations in 113 test centers in 67 countries.¹⁵

- **ICO International Fellowships, Helmerich International Fellowships, and Fred Hollows Fellowships.** The ICO offers fellowships in durations of 3 months and 1 year. The 3-month fellowships were established to help young ophthalmologists from developing nations improve their practical skills and broaden their perspectives of ophthalmology. The 1-year fellowships offer advanced subspecialty training to ophthalmologists to help transmit new knowledge to the home country. Approximately 600 ophthalmologists have been awarded fellowships through the ICO.¹⁵

Detailed information about these and other ICO educational programs are available at http://icoph.org/refocusing_education.html.

CONCLUSION

IT IS IMPERATIVE TO ALIGN PROFESSIONAL COMPETENCIES to changing contexts, growing public engagement in health, and global interdependence, including the shared aspiration of equity in health.² Access to educational tools and strengthening of global learning will help us meet the goals of VISION 2020 and beyond in eliminating avoidable blindness. As a truly global federation of ophthalmologic societies, the ICO is uniquely positioned to implement this transformative initiative. It is the intent of the ICO that the educational resource tools offered through its in-person training and online through the Center for Ophthalmic Educators find self-sustaining roles in lifelong ophthalmic learning.

ALL AUTHORS HAVE COMPLETED AND SUBMITTED THE ICMJE FORM FOR DISCLOSURE OF POTENTIAL CONFLICTS OF Interest and none were reported. Involved in substantial contributions to conception and design (A.L., K.G., M.T., B.S., K.M., T.G.); drafting the article or revising it critically for important intellectual content (A.L., K.G., M.T., B.S., K.M., T.G.); and final approval of the version to be published (A.L., K.G., M.T., B.S., K.M., T.G.). Institutional Review Board approval is not applicable to the information presented in this article.

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Biosketch

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Biosketch

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